REMARKS

The present application has been reviewed in light of the Office Action dated May 6, 2010. Claims 1-17 are presented for examination, of which Claims 1 and 15 are in independent form. Claims 18-20 have been withdrawn from consideration. Favorable reconsideration is requested.

The Office Action states that Claims 1-9 and 11-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,126,445 (*Willoughby*), in view of U.S. Patent No. 6,398,554 (*Perot et al.*); and that Claim 10 is rejected under § 103(a) as being unpatentable over *Willoughby* in view of *Perot et al.*, and further in view of U.S. Patent No. 6,968,247 (*Rathke et al.*). For at least the following reasons, Applicants submit that independent Claims 1 and 15, together with the claims dependent therefrom, are patentably distinct from the cited prior art.

Claim 1 is directed to a method of automatically fabricating a dental superstructure to be attached to an implant with the help of a digital model description of the shape. The dental superstructure includes first and second elements. A real clinical situation or a shaped clinical situation of the implant is recorded digital data. The recorded situation is analyzed and an implant axis is determined. An optimum shape of the dental superstructure is computed, based at least in part on the determined implant axis. Digital data representing the optimum shape of the dental superstructure is generated. The digital data representing the optimum shape of the dental superstructure is automatically separated into first digital data and second digital data. The first and second elements of the superstructure are fabricated from one or more blanks, based on the first digital data and the second digital data with the aid of machining equipment.

By virtue of automatically separating the digital data representing the optimum shape of the dental superstructure into first digital data and second digital data, the first and second elements of the superstructure can be fabricated to fit together more precisely compared to superstructure elements fabricated using conventional techniques, for example.[1]

Willoughby is understood to relate to dental implant abutment systems, related devices, implantology processes, and implantology techniques (*see* col. 1, lines 11-13). Nothing has been found, or pointed to, in *Willoughby* that is believed to teach or suggest that digital data representing an optimum shape of a dental superstructure is automatically separated into first digital data and second digital data. Moreover, nothing has been found, or pointed to, in *Willoughby* that is believed to teach or suggest that first and second superstructure elements are fabricated based on such first and second digital data.

The Office Action concedes that "Willoughby fails to teach automatically separating the superstructure into a first element and second element." The Office Action then cites *Perot et al.* as teaching those features from col. 5, line 35 to col. 6, line 30. However, it is respectfully submitted that *Perot et al.* also does not teach or suggest those features.

Perot et al. is understood to relate to prostheses of a fixed type or a connected type, such as bridges, crowns, stumps, and dentures (*see* col. 1, lines 4-7). *Perot et al.* discusses that a tooth 1 can be "fitted out" using a prosthesis 2 having a prosthetic fitting cap 3 on which a prosthetic crown 4 is mounted (*see* col. 3, lines 27-29). A digitized three-dimensional representation R_{4a} of an internal surface of the crown 4 can be defined based on a digitized representation R_3 of an external surface of the cap 3 (*see* col. 5, lines 14-19). A space between the digitized representation R_{4a} of the internal surface of the crown 4 and the digitized

[1] Any examples presented herein are intended for illustrative purposes and are not to be construed to limit the scope of the claims.

representation R_3 of the external surface of the cap 3 can be provided for cement that seals the cap 3 and the crown 4 together (*see* col. 5, lines 19-23).

The digitized three-dimensional representation R_4 of the external surface of the crown 4 can be defined based on a digitized representation R_2 of an external surface of the prosthesis and on an external boundary of the digitized representation R_{4a} of the internal surface of the crown 4 (*see* col. 5, lines 24-29). A volume between the surface R_{4a} of the internal surface of the crown 4 and the surface R_4 of the external surface of the crown 4 represents a total volume of the crown 4 (*see* col. 5, lines 29-32). The digitized representations R_{4a} and R_4 can be obtained using a suitable programming means (*see* col. 5, lines 32-34).

When the three-dimensional digitized representation R_3 of the external surface of the cap 3 has been chosen, a corresponding fitting cap 3 can be machined (*see* col. 5, lines 35-37). A cloud of points corresponding to the three-dimensional digitized representation R_3 of the external surface of fitting cap 3 and a cloud of points corresponding to a three-dimensional digitized representation R_{1c} of an internal surface of the prosthesis can be delivered to a numerically controlled machine (*see* col. 5, lines 37-44). A corresponding crown 4 can be machined similarly (*see* col. 5, lines 44-46). A cloud of points corresponding to the three-dimensional digitized representation R_{4a} of the internal surface of the crown 4 and a cloud of points corresponding to the three-dimensional digitized representation R4 of the external surface of the crown 4 can be delivered to a numerically controlled machine (*see* col. 5, lines 46-52).

Defects of an implantation zone can be compensated for, by producing the digitized representation R_3 of an external surface of the fitting cap 3 to match a morphology of the implantation zone while giving the crown 4 a constant thickness (*see* col. 5, lines 60-65). Machining parameters can be selected as a function of constraints associated with surfaces to be

machined, or a profile of the surfaces to be machined can be selected as a function of a machining method (*see* col. 5, line 66, to col. 6, line 4).

The prosthesis can include two distinct parts, namely the fitting cap 3 and the crown 4, and also can include a single part (*see* col. 6, lines 5-9). To make it possible to add additional material on the fitting cap 3, the digitized representation R_3 of the external surface of the fitting cap 3 can be under-dimensioned with respect to the external surface of the prosthesis determined by the digitized three-dimensional representation R_2.(*see* col. 6, lines 9-17). The additional material can include the crown 4 (*see* col. 6, lines 17-19). Alternatively, when the fitting cap 3 and the crown 4 are formed from a single part, the digitized representation R_3 of the external surface of the fitting cap 3 can be over-dimensioned with respect to the external surface of the prosthesis determined by the digitized three-dimensional representation R_2 to provide extra material that can be removed to form the crown 4 (*see* col. 6, lines 20-30).

As best understood, in *Perot et al.*, the shapes of the fitting cap 3 and the crown 4 are respectively determined by combining three-dimensional digitized representations of surrounding surfaces. More particularly, the shape of the fitting cap 3 is understood to be determined by combining the digitized representation R_2 of the external surface of the prosthesis and the digitized representation R_{4a} of the internal surface of the crown 4, and the shape of the crown 4 is understood to be determined by combining the three-dimensional digitized representation R_{4a} of the internal surface of the crown 4 and the three-dimensional digitized representation R_4 of the external surface of the crown 4. Nothing has been found in *Perot et al.* that is believed to teach or suggest that digital data representing a shape of a dental superstructure is separated into first and second digital data.

In summary, Applicants submit that *Willoughby* and *Perot et al.*, whether considered separately or in combination, assuming such combination would even be permissible, fail to teach or suggest a method that includes "automatically separating the digital data representing the optimum shape of the dental superstructure into first digital data and second digital data," and "fabricating the first and second elements from one or more blanks, based on the first digital data and the second digital data with the aid of machining equipment," as recited in Claim 1.

Moreover, in *Perot et al.*, the fitting cap 3 is understood to be attached to a tooth stump and the crown 4 is understood to be attached to the fitting cap 3; neither the fitting cap 3 nor the crown 4 is understood to be attached to an implant. The teachings of *Perot et al.* are not believed to be pertinent to a method that includes separating digital data representing an optimum shape of a dental superstructure, which is computed based on a determined implant axis, as recited in Claim 1, let alone does *Perot et al.* account for an implant axis. As such, there would have been no reason why one skilled in the art, who was faced with the same problem relating to an implant, as was confronted by Applicants at the time of their invention, would have even consulted *Perot et al.*, let alone been motivated to attempt to combine it with *Willoughby*, as proposed in the Office Action.

Accordingly, for all the above reasons, Applicants submit that Claim 1 is clearly patentable over *Willoughby* and *Perot et al.* (whether considered separately or in combination), and respectfully request withdrawal of the rejection of Claim 1 under 35 U.S.C. § 103(a).

Independent Claim 15 include features sufficiently similar to those of Claim 1 that Claim 15 is believed to be patentable over *Willoughby* and *Perot et al.*, whether considered separately or in combination, for at least the reasons discussed above.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other rejected claims in the present application depend from one or another of independent Claims 1 and 15 and are submitted to be patentable for at least the same reasons. Because each dependent claim also is deemed to define an additional aspect of the invention, however, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

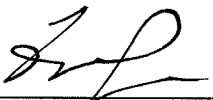
This Request for Reconsideration After Final Action is believed clearly to place the present application in condition for allowance. Therefore, entry of this Request under 37 C.F.R. § 1.116 is believed proper and is respectfully requested, as an earnest effort to advance prosecution and reduce the number of issues. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and an early passage to issue of the present application.

No petition to extend the time for responding to the Office Action is deemed necessary for this Request. If, however, such a petition is required to make this Request timely filed, then this paper should be considered such a petition and the Commissioner is authorized to charge the requisite petition fee to Deposit Account 06-1205.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should be directed to our address listed below.

Respectfully submitted,



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